



0065667

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Richland Operations Office  
P.O. Box 550  
Richland, Washington 99352

05-AMRC-0311

**JUL 07 2005**

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**RECEIVED**  
JUL 12 2005  
**EDMC**

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Addressees:

**TRANSMITTAL OF DOE/RL-2004-73, REVISION 0, RADIOACTIVE AIR EMISSIONS  
NOTICE OF CONSTRUCTION FOR CLEANING RADIOLOGICALLY CONTAMINATED  
VEHICLES**

Enclosure 1 is a copy of the subject Notice of Construction (NOC) application. This NOC application is being submitted to the U.S. Environmental Protection Agency (EPA), Region 10 and the State of Washington Department of Health, Division of Radiation Protection for approval pursuant to Title 40, Code of Federal Regulations (CFR), Part 61.07 and Washington Administrative Code 246-247-060. With the EPA's approval, this application will also provide initial start-up notification pursuant to 40 CFR 61.09 (a)(1).

Enclosure 2 is a Notification of Off-Permit Change to incorporate the NOC for potential radioactive air emissions from cleaning activities into the Hanford Site Air Operating Permit (AOP). This information is being provided to the State of Washington Department of Ecology, consistent with the role as lead for the Hanford Site AOP.

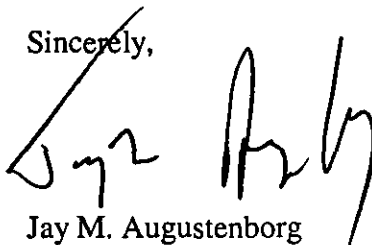
Addressees  
05-AMRC-0311

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JUL 07 2005

If you have questions, please contact me or your staff may contact Steve T. Burnum, of my staff, on (509) 376-8409.

Sincerely,



Jay M. Augustenborg  
Site Infrastructure Team Lead

AMRC:STB

Enclosures:

1. DOE/RL-2004-73, Rev 0 NOC
2. DOE/RL-2004-73, Rev. 0 Off-Permit Notice

cc w/encls:

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cc w/o encls:

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Enclosure 1

DOE/RL-2004-73, Revision 0  
RADIOACTIVE AIR EMISSIONS NOTICE OF CONSTRUCTION FOR CLEANING  
RADIOLOGICALLY CONTAMINATED VEHICLES

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## TABLE

Table 1. Maximum Estimated Dose Consequences from Combined RCV/Component Cleaning Activities. ....	1
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## ACRONYMS

1		
2		
3		
4	ALARA	as low as reasonably achievable
5	ALARACT	as low as reasonably achievable control technology
6		
7	CFR	Code of Federal Regulations
8		
9	DOE-RL	U.S. Department of Energy, Richland Operations Office
10		
11	EPA	U.S. Environmental Protection Agency
12		
13	HEPA	high-efficiency particulate air
14		
15	LIGO	Laser Interferometer Gravitational Wave Observatory
16		
17	MEI	maximally exposed individual
18	MPR	maximum public receptor
19		
20	NOC	notice of construction
21		
22	PCM	periodic confirmatory measurement
23	PTE	potential-to-emit
24	PTRAEU	portable/temporary radionuclide air emission unit
25		
26	RCV	radiologically contaminated vehicle
27	RWP	radiation work permit
28		
29	TEDE	total effective dose equivalent
30		
31	WAC	Washington Administrative Code
32		

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2 **RADIOACTIVE AIR EMISSIONS NOTICE OF CONSTRUCTION FOR**  
3 **CLEANING RADIOLOGICALLY CONTAMINATED VEHICLES**  
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6 **1.0 INTRODUCTION**

7 This document serves as a notice of construction (NOC) pursuant to the requirements of Washington  
8 Administrative Code (WAC) 246-247-060 for activities associated with the cleaning of radiologically  
9 contaminated vehicles (RCVs) and/or components of RCVs on the Hanford Site. The RCVs will include  
10 such vehicles as cranes, trucks, tractors, lifts, or other devices or structures for conveyance of persons or  
11 things.  
12

13 In addition, the following description and references are provided to the U.S. Environmental Protection  
14 Agency (EPA) as an NOC, in accordance with Title 40 Code of Federal Regulations (CFR), Part 61,  
15 "National Emission Standards for Hazardous Air Pollutants." The information required for submittal to  
16 the EPA is specified in 40 CFR 61.07. The potential emissions from this activity are estimated to provide  
17 less than 0.1 millirem year total effective dose equivalent (TEDE) to the hypothetical offsite maximally  
18 exposed individual (MEI) and commencement is needed within a short time. Therefore, this application  
19 also is intended to provide notification of the anticipated date of initial startup in accordance with the  
20 requirement listed in 40 CFR 61.09(a)(1), and it is requested that approval of this application also  
21 constitutes EPA acceptance of this initial startup notification. Written notification of the actual date of  
22 initial startup, in accordance with the requirement listed in 40 CFR 61.09(a)(2), will be provided later.  
23

24 **For the combined activities covered under this NOC, the estimated unabated and abated TEDE to**  
25 **the hypothetical MEI are 3.4 E-05 millirem per year.**  
26  
27

28 **2.0 FACILITY LOCATION (REQUIREMENT 1)**

29 Cleaning of RCVs and/or components of RCVs would be conducted throughout the 200 Areas plateau on  
30 the Hanford Site. The address and approximate geodetic coordinates for the Hanford Site are as follows:  
31

32 U.S. Department of Energy, Richland Operations Office (DOE-RL)  
33 Hanford Site  
34 Richland, Washington 99354  
35

36 46° 22" North Latitude  
37 119° 16" West Longitude  
38

### 3.0 RESPONSIBLE MANAGER (REQUIREMENT 2)

The responsible manager for the activities described under this NOC is as follows:

Keith A. Klein, Manager  
Richland Operations Office  
U.S. Department of Energy  
P.O. Box 550, MSIN A7-50  
Richland, Washington 99354  
(509) 376-7395.

### 4.0 TYPE OF PROPOSED ACTION (REQUIREMENT 3)

This NOC application is being submitted for categorical approval of cleaning activities conducted at various locations which will provide a modification of fugitive emissions associated with the existing 200 Areas Diffuse/Fugitive General Emission Unit, Identification Number 486. The proposed action is to clean RCVs and/or components of RCVs on the 200 Areas plateau. As defined by WAC 246-247-030(25), the activities described herein do not represent a significant modification of the Diffuse/Fugitive Emission Unit.

### 5.0 STATE ENVIRONMENTAL POLICY ACT (REQUIREMENT 4)

The proposed action is categorically exempt from the requirements of the *State Environmental Policy Act* under WAC 197-11-845.

### 6.0 PROCESS DESCRIPTION (REQUIREMENT 5)

The proposed activity will involve cleaning RCVs and/or radiologically contaminated components (e.g., radiator) of an RCV. A portable, commercially available, high-pressure, water/steam cleaning unit could be deployed to the location of the RCV/component, or the RCV/component (after appropriate precautions to isolate and contain smearable contamination) could be moved to some other location in the 200 Areas plateau before cleaning. Cleaning may also involve brushing, scrubbing, or other manual methods conducted in a manner to minimize airborne dust.

A RCV/component could be isolated with an engineered shelter over a basin. The basin could be a collapsible liner for collection of waste water. The shelter could be a galvanized steel tube framework with arched trusses and covered with polyester sheeting. Alternatively, the activity could be conducted without a shelter over the basin (i.e., open air) with reasonable operational controls (e.g., directing water/steam cleaning stream downward, concentrating stream on RCVs or components, using lowest possible pressure settings) being implemented.

A portable high-pressure, commercially available, water/steam washing unit could be used to clean the RCV/component. Personnel would direct the cleaning stream to areas of localized areas of contamination on the RCV/component. The RCV/component would be surveyed intermittently (e.g., hand-held field instruments, swipes, or dried sample analysis [for alpha] as necessary) to determine level of remaining

contamination. This process would be repeated until sufficient decontamination is achieved, as determined by Radiation Protection personnel, to allow the RCV/component to be returned to service (i.e., no smearable contamination remains, and a fixed contamination level of no greater than 0.5 millirem/hour dose rate).

After decontamination to appropriate levels, the RCV/component would be removed from the shelter, if used, and basin. The RCV/component could be returned to service, or if necessary, appropriately packaged and disposed. Contaminated waste materials resulting from the cleaning processes, including waste water, will be packaged appropriately using standard procedures and dispositioned to approved storage or disposal. Activities could include solidification of liquid waste (such as absorbing liquids in tanks, containers; low-temperature [i.e., less than 100 degrees Celsius] evaporation) and subsequent transfer to appropriate on- or off-site treatment/disposal facilities.

The shelter (if used) and basin would be surveyed at the end of the cleaning process to ensure appropriate radiological controls are in place. The shelter/basin would be decontaminated appropriately and maintained for future cleaning activities. If necessary, the shelter/basin could be packaged and disposed.

High-efficiency particulate air (HEPA) -filtered vacuums or portable/temporary radionuclide air emission units (PTRAEUs) may be used to support the cleaning activities. If needed or chosen for use during these activities, the categorical NOCs for sitewide use of the PTRAEU exhaustor (DOE/RL-96-75, Revision 2) or HEPA-filtered vacuum radioactive air emission unit (DOE/RL-97-50, Revision 1) could be used.

## 7.0 ANNUAL POSSESSION QUANTITY AND PHYSICAL FORM (REQUIREMENTS 8, 10, AND 11)

The physical forms of the radionuclides in the cleaning activity would be particulate solid and liquid. For purposes of emissions and offsite dose estimates, the release of the radionuclides in the annual possession quantity, as presented in Section 10.0, is assumed to be in the form of particulates.

Any radionuclide might be present in the RCV cleaning activities. The radionuclides of concern for this activity are calculation-based. As shown in Table 1, conservative dose/emission calculations are based on total alpha (all represented by americium-241) and total beta/gamma (all represented by cesium-137) associated with all the RCV/component material cleaning activities combined.

These radionuclides represent the radionuclides present in the waste streams typically received during RCV/component cleaning activities. These are not inclusive of all radionuclides that could be encountered from the Hanford Site RCV/component cleaning activities. Any radionuclide could be encountered during cleaning operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered but would not affect the estimates of dose impact described herein. Although any radionuclide could be present, for conservatism, all beta/gamma is assumed to be cesium-137 and all alpha is assumed to be americium-241 for dose calculation estimates. Other radionuclides may be encountered and are conservatively represented by the total alpha and total beta/gamma constituents.

## 8.0 ABATEMENT TECHNOLOGY AND CONCEPTUAL DRAWING(S) (REQUIREMENTS 6 AND 7)

There is no airborne emissions ventilation equipment with abatement associated with the cleaning activities described for this NOC. Many of the emission controls used for the diffuse and fugitive emissions during cleaning operations would be administrative, based on as low as reasonably achievable (ALARA) principles and consist of ALARA techniques as delineated in the Hanford Site radiation control procedures. The cleaning operations would be performed in accordance with the controls specified in a radiation work permit (RWP) and/or operating procedures, available for inspection upon request.

It is proposed that the controls specified in the RWP and/or operating procedures (e.g., restricting cleaning activities under high-wind conditions) satisfy as low as reasonably achievable control technology (ALARACT) for the cleaning activities. Such controls, minimizing airborne radioactive emissions resulting from the cleaning operations, include the following.

- All activities would be conducted under the auspices of radiological control technicians. Routine field surveys, including swipes/smears, will be conducted. Fixatives, covers, or other standard measures will be used, as necessary, to contain contamination.
- The maximum radionuclide inventory associated with routine airborne releases would be very small. Appropriate spill prevention procedures would be in place to minimize the probability of a release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills.

HEPA-filtered vacuums and PTRAEUs may be used to support the cleaning activities. If these units are used, they will be used in compliance with the abatement controls identified in the associated categorical NOC approvals currently in place for these units.

## 9.0 MONITORING SYSTEM (REQUIREMENT 9)

The total unabated potential-to-emit (PTE) for this project is less than 0.1 millirem per year TEDE to the MEI. The radionuclide emissions will be monitored by the existing near-field monitoring program already approved for the 200 Areas fugitive/diffuse emissions (Emission Unit ID 486).

The potential unabated offsite dose associated with the RCV/component cleaning activities is calculated to be less than 0.1 millirem per year (refer to Table 1) using the conservative approved method specified in WAC 246-247-030(21)(a).

The near-field ambient air sampling program currently in effect for the Hanford Site would be used to verify low emissions (PNNL-13910). Currently this program collects and measures samples of the alpha and beta ambient air activity every 2 weeks. Isotopic analysis of those samples currently is determined and reported every 6 months. The near-field ambient air quality program remains the mechanism for satisfying the requirement for periodic confirmatory measurement (PCM).

Additionally, radiological surveys during cleaning operations (e.g., smears, radiation monitoring measurements on the RCV using hand-held field instruments) would be conducted. These methods are not a direct measurement of effluent emissions. The methods are intended to help verify ALARA emissions are being kept under the contamination levels by which work is controlled. That is, the actual emissions inherently would be below the estimated emissions, which are based on and calculated from the same contamination levels.

1  
2 HEPA-filtered vacuums or PTRAEUs may be used to support the cleaning activities. If these units are  
3 used, they will be provided with PCM as identified in the associated categorical NOC approvals currently  
4 in place for these units.  
5  
6

#### 7 **10.0 RELEASE RATES (REQUIREMENTS 12 AND 13)**

8 Release rates are based on the conservative assumptions provided in Table 1 regarding the isotopic  
9 mixture amounts and ratios. Unabated release rates, provided in Table 1, were determined by applying  
10 the 40 CFR 61, Appendix D, release factor for liquids or particulate solids ( $1.0 \text{ E-}03$ ) to the estimated  
11 annual possession quantity. Because there is no air emissions ventilation equipment with abatement  
12 proposed, the abated releases are assumed to be the same as unabated releases.  
13

14 The cleaning operations would operate in a batch mode.  
15

16 The PTE is based on total alpha (as americium-241) and total beta/gamma (as cesium-137). For  
17 conservatism, releases are calculation-based.  
18  
19

#### 20 **11.0 OFFSITE IMPACT (REQUIREMENTS 14 AND 15)**

21 The maximum public receptor (MPR) was assumed to be a hypothetical MEI who eats food grown  
22 regionally. In this case, for maximum conservatism, the MPR was assumed to be an onsite individual  
23 located at the Laser Interferometer Gravitational Wave Observatory (LIGO), (HNF-3602, Revision 1).  
24 Based on CAP-88 model results (represented in HNF-3602, Revision 1), the LIGO location represents the  
25 Hanford Site MEI location of highest dose consequence (millirem per year TEDE to the MEI per unit  
26 curie released) for ground level releases from the 200 West Area.  
27

28 Using the CAP-88-based calculated unit dose conversion factors, the estimated potential TEDE to the  
29 MEI resulting from the unabated fugitive emissions from the combined cleaning activities is  
30  $3.4 \text{ E-}05$  millirem per year (refer to Table 1). No abatement equipment is assumed; therefore, the abated  
31 TEDE also is  $3.4 \text{ E-}05$  millirem per year.  
32

33 The reported TEDE to the MEI resulting from all 2003 Hanford Site air emissions (point sources, diffuse,  
34 and fugitive sources) was 0.084 millirem (DOE/RL-2004-09). The emissions resulting from the cleaning  
35 activities, in conjunction with other operations on the Hanford Site, would not exceed the National  
36 Emission Standard of 10 millirem per year (40 CFR 61, Subpart H).  
37  
38

#### 39 **12.0 COST FACTORS AND FACILITY LIFETIME (REQUIREMENTS 16 AND 17)**

40 There are no ventilation equipment components or systems; therefore, there are no abatement control  
41 technology cost factors associated with the proposed activity. The emission controls used during the  
42 cleaning activities administratively would be defined and consist of ALARA principles and techniques.  
43

44 Cleaning operations would be conducted on an as-needed basis; the expected lifetime of cleaning  
45 operations would be up to 20 years.  
46

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2 **13.0 TECHNOLOGY STANDARDS (REQUIREMENT 18)**

3 ASME/ANSI AG-1, ASME/ANSI N509, ASME/ANSI N510, ANSI/ASME NQA-1, 40 CFR 60,  
4 Appendix A Methods 1, 1A, 2, 2A, 2C, 2D, 4, 5, and 17, and ANSI N13.1.

5  
6 The listed control technology standards have been considered; however, they are not applicable since no  
7 ventilation abatement control equipment is proposed. The administratively defined ALARA-based  
8 emission controls proposed for RCV/component cleaning activities are proposed as adequate to limit and  
9 control emissions.

10  
11 **14.0 REFERENCES**

12 DOE/RL-96-75, Rev. 2, *Radioactive Air Emissions Notice of Construction Portable/Temporary*  
13 *Radioactive Air Emissions Units*, September 1999, U.S. Department of Energy, Richland  
14 Operations Office, Richland Washington.

15  
16 DOE/RL-97-50, Rev.1, *Radioactive Air Emissions Notice of Construction for HEPA Filtered Vacuum*  
17 *Radioactive Air Emission Units*, September 1999, U.S. Department of Energy, Richland Operations  
18 Office, Richland Washington.

19  
20 DOE/RL-2004-09, *Radionuclide Air Emissions Report for the Hanford Site, Calendar Year 2004*,  
21 June 2004, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

22  
23 HNF-3602, Revision 1, *Calculating Potential to Emit Releases and Doses for FEMPs and NOCs*, Fluor  
24 Hanford, Richland, Washington.

25  
26 PNNL-13910. Appendix 2, *Hanford Site Near-Facility Environmental Monitoring Data Report for*  
27 *Calendar Year 2001*, September 2002, Pacific Northwest National Laboratory, Richland,  
28 Washington.

Table 1. Maximum Estimated Dose Consequences from Combined RCV/Component Cleaning Activities.

RADIONUCLIDES	Potential unabated release (curies/year)	Potential abated release* (curies/year)	Dose factor CAP88-PC** (millirem/curie)	Dose (millirem/year)
Alpha (as americium-241)	1.5 E-06	1.5 E-06	1.7 E+01	2.5 E-05
Beta/gamma (as cesium-137)	2.9 E-05	2.9 E-05	3.1 E-01	8.9 E-06
Total				3.4 E-05

\* Potential abated release is assumed to be the same as the potential unabated release because no ventilation emissions abatement control equipment will be provided.

\*\* HNF-3602, Revision 1: *Calculating Potential to Emit Releases and Doses for FEMPs and NOCs.*

Assuming:

**Alpha** = americium-241; 7.62 E+12 dpm/g; 3.43 Ci/g

100 times detection limit (100 dpm/100 cm<sup>2</sup>)

given proposed surface area (e.g., hypothetical large radiator) is 6400 cm<sup>2</sup>

particulate release fraction = 1.0 E-03

Also, for conservatism: 5 x estimated dpm; 10 x surface area; 100 x frequency

Dose conversion factor (200 West Area, Am-241, ground level release) = 17 mrem/Ci (1.7 E+01 mrem/Ci)

(10,000 dpm/100 cm<sup>2</sup>) x (6400 cm<sup>2</sup>) x (1g/7.62E12 dpm) x (3.43 Ci/g) x (10<sup>-3</sup>)  
x (additional assumption of 5000 multiplier) = 1.5 E-06 Ci/yr

1.5 E-06 Ci/yr x (1.7 E+01 mrem/Ci) = **2.5 E-05 mrem/yr**

**Beta/Gamma** = cesium-137; 1.92 E+14 dpm/g; 86.5g Ci/g

Measured maximum of ~117,000 dpm/100 cm<sup>2</sup>; rounded up to 200,000 dpm/100 cm<sup>2</sup>

given proposed surface area is 6400 cm<sup>2</sup>

particulate release fraction = 1.0 E-03

Also: 5 x estimated dpm; 10 x surface area; 100 x frequency

Dose conversion factor (200 West Area, Cs-137, ground release) = 0.31 mrem/Ci (3.1 E-01 mrem/Ci)

(200,000 dpm/100 cm<sup>2</sup>) x (6400 cm<sup>2</sup>) x (1g/1.92E14 dpm) x (86.5 Ci/g) x (10<sup>-3</sup>)  
x (additional assumption of 5000 multiplier) = 2.9 E-05 Ci/yr

2.9 E-05 Ci/yr x (3.1 E-01 mrem/Ci) = **8.9 E-06 mrem/yr**

Therefore, total annual dose = 2.5 E-05 mrem/yr + 8.9 E-06 mrem/yr = **3.4 E-05 mrem/yr.**



Enclosure 2

HANFORD SITE AIR OPERATING PERMIT  
NOTIFICATION OF OFF-PERMIT CHANGE  
Permit Number: 00-05-006

FOR

DOE/RL-2004-73, Revision 0  
RADIOACTIVE AIR EMISSIONS NOTICE OF CONSTRUCTION FOR  
CLEANING RADIOLOGICALLY CONTAMINATED VEHICLES

# HANFORD SITE AIR OPERATING PERMIT

## NOTIFICATION OF OFF-PERMIT CHANGE

**Permit Number: 00-05-006**

This notification is provided to Washington State Department of Ecology, Washington State Department of Health, and the U.S. Environmental Protection Agency as notice of an off-permit change described as follows.

This change is allowed pursuant to WAC 173-401-724(1) as:

1. Change is not specifically addressed or prohibited by the permit terms and conditions
2. Change does not weaken the enforceability of the existing permit conditions
3. Change is not a Title I modification or a change subject to the acid rain requirements under Title IV of the FCAA
4. Change meets all applicable requirements and does not violate an existing permit term or condition
5. Change has complied with applicable preconstruction review requirements established pursuant to RCW 70.94.152.

Provide the following information pursuant to WAC-173-401-724(3):

<b>Description of the change:</b>
A Radioactive Air Emissions Notice of Construction, <i>Radioactive Air Emissions Notice of Construction for Cleaning Radiologically Contaminated Vehicles</i> (DOE/RL-2004-73, Revision 0), is being submitted to the Washington State Department of Health (WDOH) and the U.S. Environmental Protection Agency (EPA) for approval. A change in the Hanford Site Air Operating Permit is required to indicate this source of air emissions.
<b>Date of Change:</b>
Effective date will be the later of the two approvals by WDOH or EPA of the NOC.
<b>Describe the emissions resulting from the change:</b>
Radioactive air emissions with the total estimated unabated and abated total effective dose equivalent to the hypothetical maximum exposed individual are 3.4 E-05 millirem per year.
<b>Describe the new applicable requirements that will apply as a result of the change:</b>
Applicable requirements will be identified in approval notifications by WDOH and EPA.
<b>For Hanford Use Only:</b>
AOP Change Control Number: _____ Date Submitted: _____